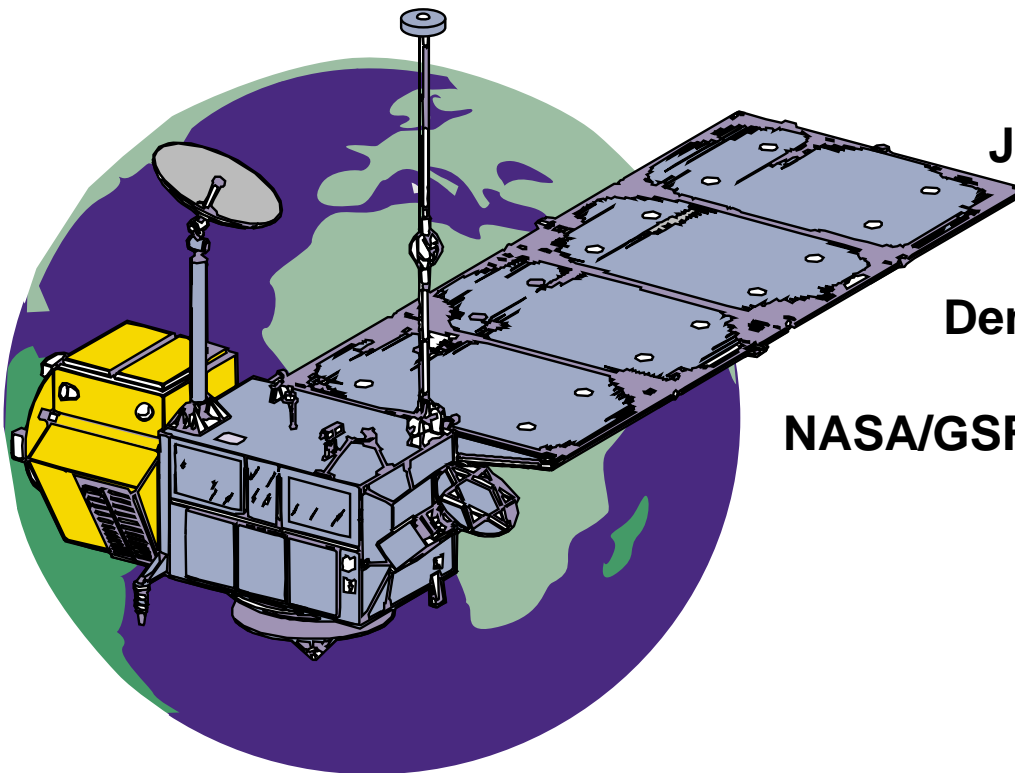


TOPEX/Poseidon

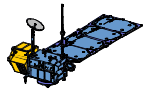
Satellite/Sensors Performance Characteristics Workshop #10



Presented By:
John Hultberg
Jet Propulsion Laboratory

Prepared By:
Dennis Lockwood/Raytheon
David Hancock
NASA/GSFC Wallops Flight Facility

Presented At:
JPL
July 25, 2001



TOPEX Side A

Turned On: August 21, 1992
Turned Off: February 9, 1999

Total Hours from Turn On to Turn Off:

OFF 394
IDLE 6,100
TRACK 50,200

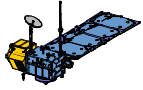
TOPEX Side B

Turned On: February 10, 1999

Total Hours from Turn On through July 25, 2001:

OFF 51
IDLE 1,900
TRACK 19,500

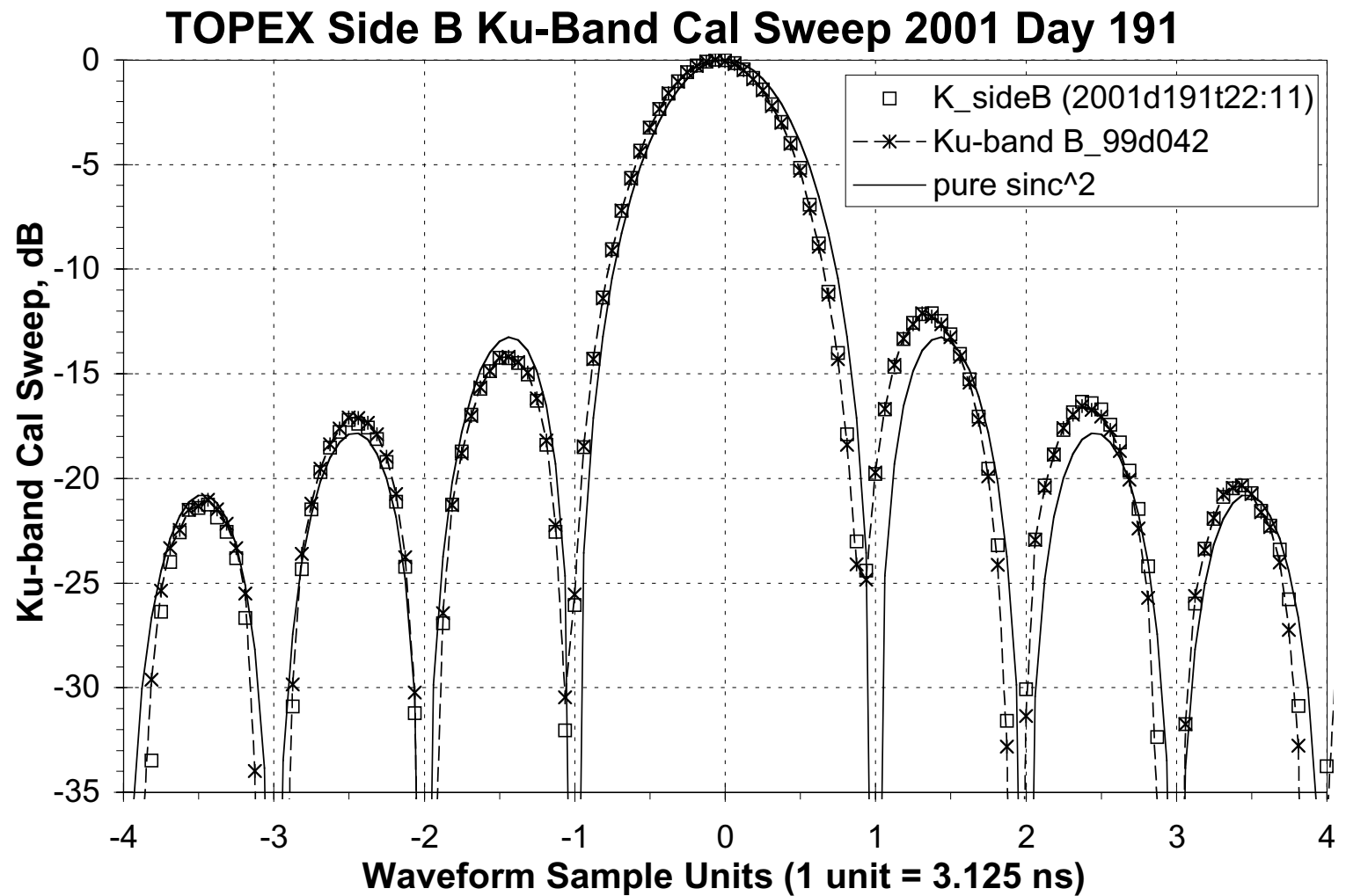
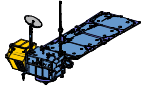


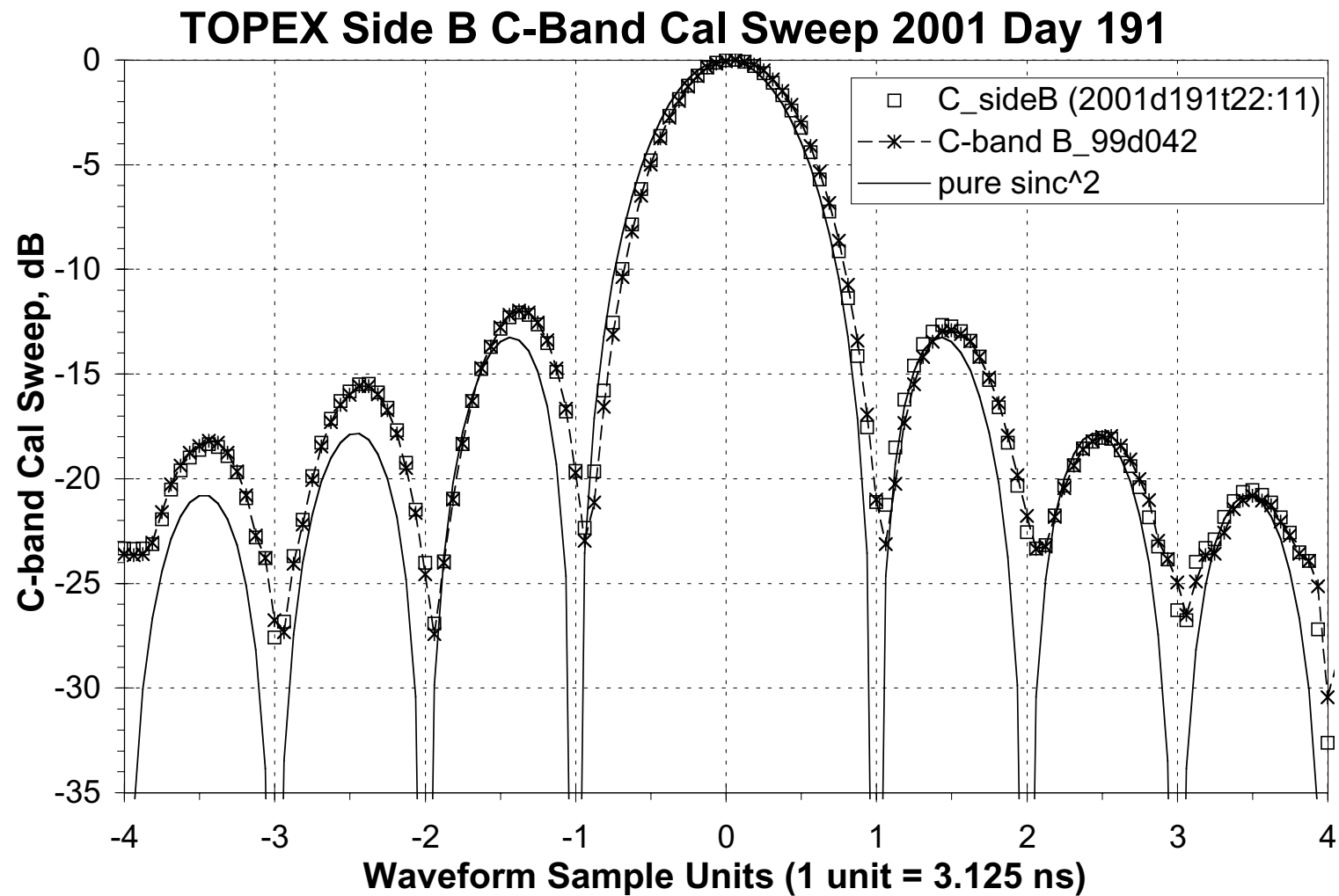
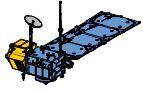


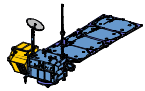
Side B Status

- **Side B continues to operate well.**
- **Cal Sweep Tests are performed monthly, to discern any Side B PTR changes. None detected.**
- **No significant concerns.**
- **Issued “TOPEX Radar Altimeter Engineering Assessment Report - Update: Side B Turn-On to January 1, 2001”, June 2001. (<http://topex.wff.nasa.gov/Documents>)**



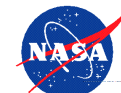


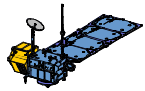




TOPEX ALT

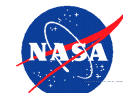
NASA Altimeter Side B - Key Events	
Day	Event
1999/041	Commanded Side B to IDLE Mode and Uploaded Memory Patches
1999/042	Commanded Side B to STANDBY and then to TRACK Mode
1999/042	Side B Testing, including: Mode Checks, Cal-Sweep, and Waveform Leakage Tests
1999/043	Additional Testing, including: Cal-Sweep, Waveform Leakage Tests, and Gate-Shift Tests
1999/048	Gate Shift Tests (lost 3.1 hours of data)
1999/049	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/049-050	Off-Nadir Tests
1999/050	Began First Side B Operational Cycle [Cycle 237]
1999/071	Improper SEU Recovery (lost 0.7 hours of data)
1999/089	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/109	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/109	Changed to IDLE Mode for SSALT
1999/119	Returned to TRACK Mode
1999/119	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/149	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/179	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/198-199	C-Band Autonomously Switched to Side A Transmit (lost 5.6 hours of data)
1999/209	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/223	C-Band CAMPIN Autonomously Disabled (lost 1.6 hours of data). Some corruption of Non-Protected Memory
1999/226	Unsuccessful Restoration of Non-Protected Memory, due to Command Table Error (lost 0.6 hours of overland data)
1999/231	Successful Restoration of Non-Protected Memory (lost 1.1 hours of mostly overland data)
1999/236	Commanding for New Parameter File, to Increase AGC Minimum from 13 to 15 dB (lost 0.1 hours of overland data).
1999/237	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/238	Changed to IDLE Mode for SSALT
1999/243	Spacecraft Safehold, after a reset of central data processing unit. ALT was automatically turned OFF.
1999/243	Commanded ALT back to IDLE Mode. Total OFF time was 15.7 hours.

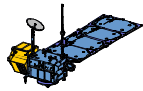




TOPEX ALT

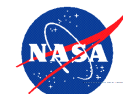
NASA Altimeter Side B - Key Events	
Day	Event
1999/244	Uploaded full memory dump command. ALT remains in IDLE.
1999/245	ALT turned OFF during Attitude Control Electronics switchover
1999/246	Commanded ALT back to IDLE Mode and Uploaded full memory dump command. ALT remains in IDLE. OFF time was 7.9 hours.
1999/248	Returned to TRACK Mode
1999/252	Digital Filter Bank Calibration (lost 0.3 hours of overland data)
1999/265	Sent Commands in Attempt to Improve Acquisition . Lost 1.1 hours of land and ocean data. Commanding was Unsuccessful.
1999/268	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/276	Ku-Band Autonomously Switched to Side A Transmit (lost 3.1 hours of data)
1999/298	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/327	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/337	Changed to IDLE Mode for SSALT
1999/347	Returned to TRACK Mode
1999/357	Cal-Sweep Test (lost 0.4 hours of overland data)
1999/360	SEU resulted in corruption of the engineering Pass Count value. No apparent effect on ALT science data.
2000/012	Orbital Maneuver #13 (affected 1.2 hours of data)
2000/022	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/036	Digital Filter Bank Calibration (lost 0.3 hours of overland data)
2000/052	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/056-061	SEU at 056/141130 UTC resulted in corrupted engineering spare word. Memory reload on 061/070828 UTC corrected problem. ALT science data quality during the interim was apparently not affected.
2000/061	Reloaded memory to rectify engineering memory corruption which began on day 056. Lost 0.9 hours of mostly overland data. This memory reload also restored the engineering Pass Count value which had been corrupted by an earlier SEU on 1999/360.
2000/067	Improper SEU recovery (lost 5.8 hours of data)
2000/081	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/091	Changed to IDLE Mode for SSALT

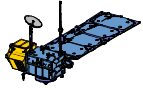




TOPEX ALT

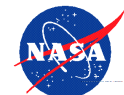
NASA Altimeter Side B - Key Events	
Day	Event
2000/101	Returned to TRACK Mode
2000/111	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/141	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/157	Improper SEU recovery (lost 1.9 hours of data)
2000/171	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/200	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/200	Changed to IDLE Mode for SSALT
2000/210	Returned to TRACK Mode
2000/227	Improper SEU recovery (lost 1.4 hours of data)
2000/230	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/260	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/275	Improper SEU recovery (lost 1.1 hours of data)
2000/290	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/299	Changed to IDLE Mode for SSALT
2000/309	Returned to TRACK Mode
2000/319	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/322	Changed to IDLE Mode for Leonid Meteor Shower (lost 2.0 hours of data)
2000/329	Spacecraft Safehold, ALT was automatically turned OFF due to bad ephemeris load.
2000/330	Commanded Alt back to Track. Total off time was 27.1 hours.
2000/349	Cal-Sweep Test (lost 0.4 hours of overland data)
2000/352	Attitude Excursion to about 0.21 degrees for about 2000 seconds
2001/012	Cal-Sweep Test (lost 0.4 hours of overland data)
2001/013	Changed to IDLE Mode for SSALT
2001/023	Returned to TRACK Mode
2001/036	The 'non-nominal' switch to Yaw Steering was caused by an OBC Euler-C Flag not being reset following the bad ephemeris load and Safehold of 11/23/00. (Flag was not reset due to an erroneous reinitialization command file). Lost 0.4 hours of data.
2001/043	Cal-Sweep Test (lost 0.4 hours of overland data)

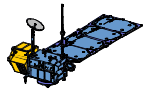




TOPEX ALT

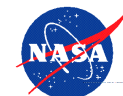
NASA Altimeter Side B - Key Events	
Day	Event
2001/072	Cal-Sweep Test (lost 0.4 hours of overland data)
2001/079	Improper SEU recovery (lost 1.33 hours of data)
2001/101	Digital Filter-Bank Leakage Test and Transmit Test (lost 0.9 hours of data)
2001/102	Cal-Sweep Test (lost 0.4 hours of overland data)
2001/112	Improper SEU recovery (lost 1.3 hours of data)
2001/132	Cal-Sweep Test (lost 0.4 hours of overland data)
2001/162	Cal-Sweep Test (lost 0.4 hours of overland data)
2001/166	Improper SEU recovery (lost 0.01 hours of data)
2001/173	Improper SEU recovery (lost 3.2 hours of data)
2001/191	Cal-Sweep Test (lost 0.4 hours of overland data)

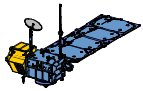




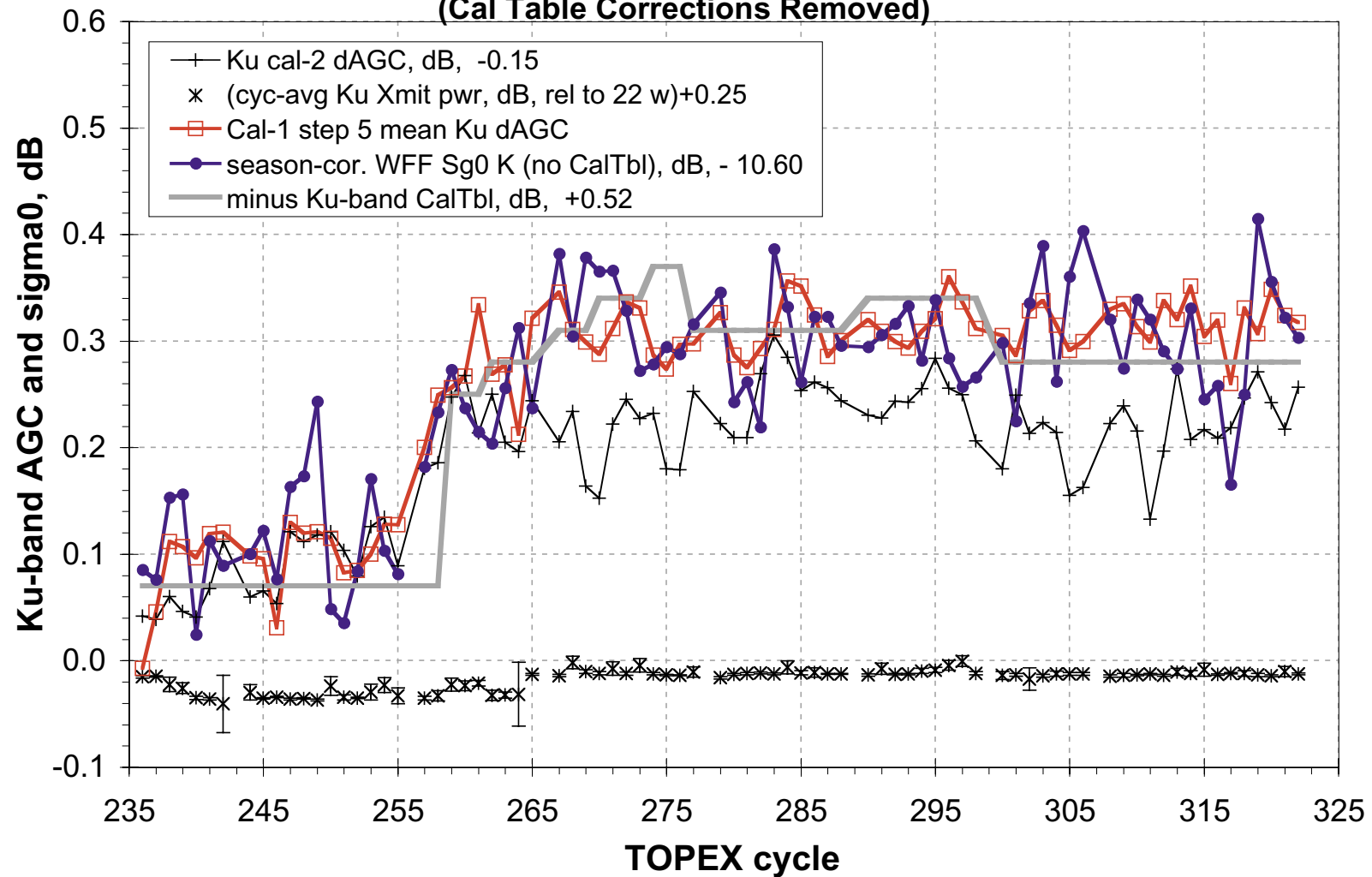
Significant Events Since Last Workshop

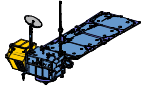
- 2000/329 Safehold
 - Turned off due to bad ephemeris load
- 2000/352 Attitude Excursion
 - Exhibited an excursion to about 0.21 degrees for a duration of about 2000 seconds
 - Science data appeared reasonable throughout duration
- 2001/036 “Non-nominal” Switch
 - Switch to yaw steering caused by an OBC Euler-C Flag not being reset following Safehold on 2000/329
- 2001/101 Digital Filter Bank Leakage Test and Transmit Test
 - No Change



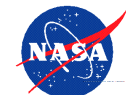
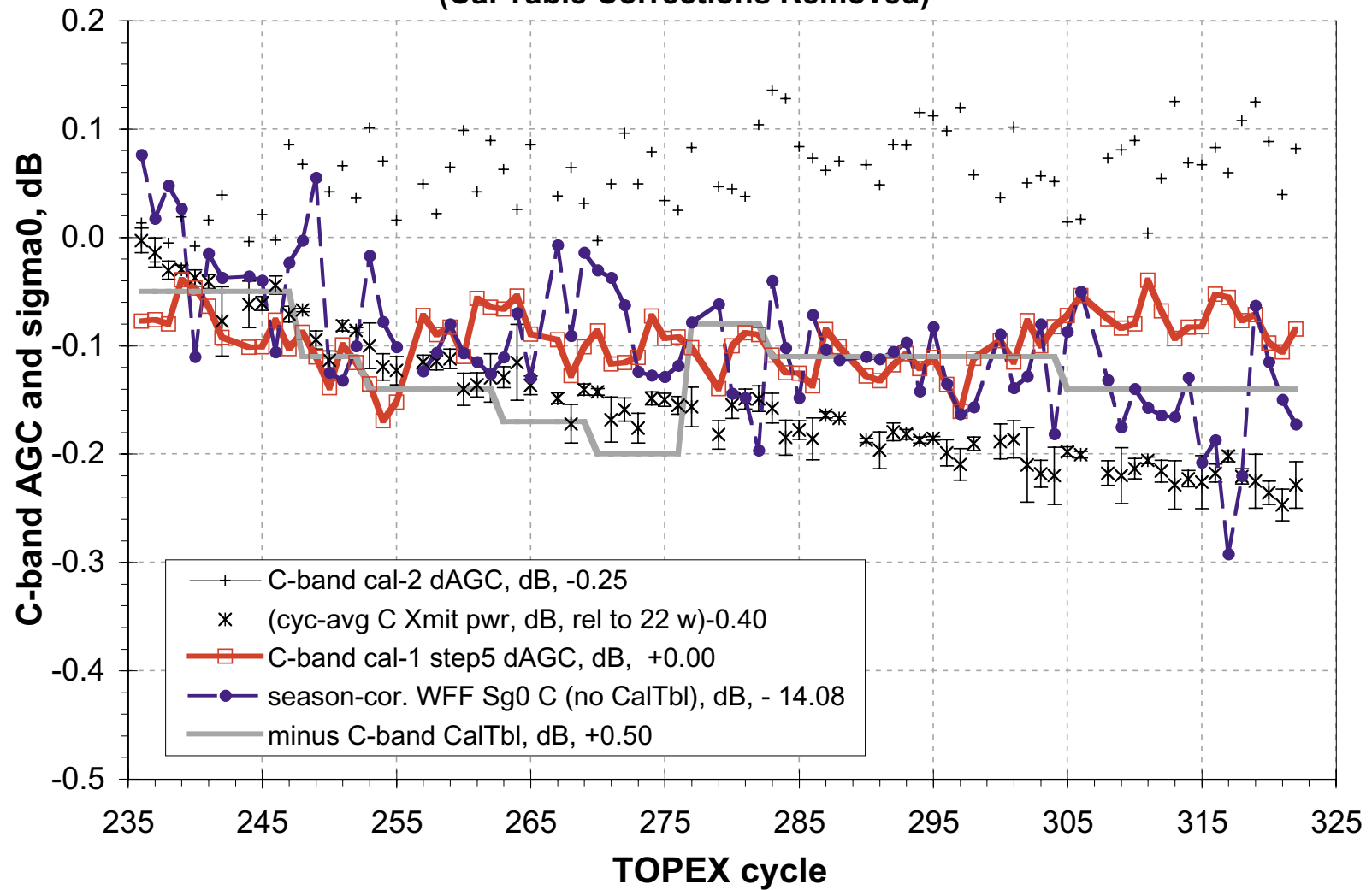


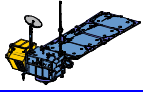
Ku Side B Cycle-Avg Cal-1 & Cal-2 Delta AGC, Sigma0 (Cal Table Corrections Removed)



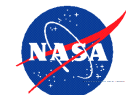
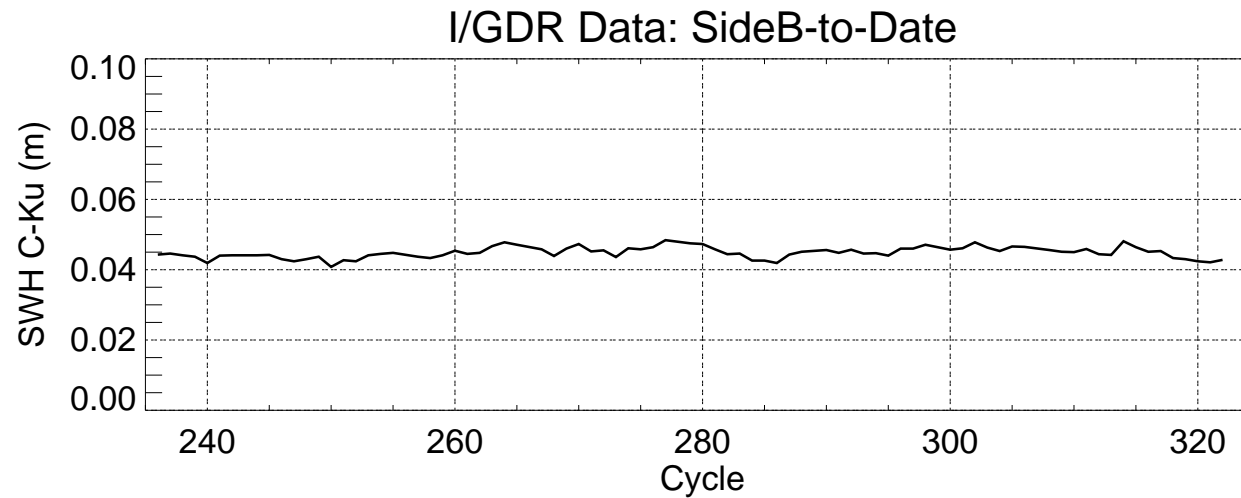
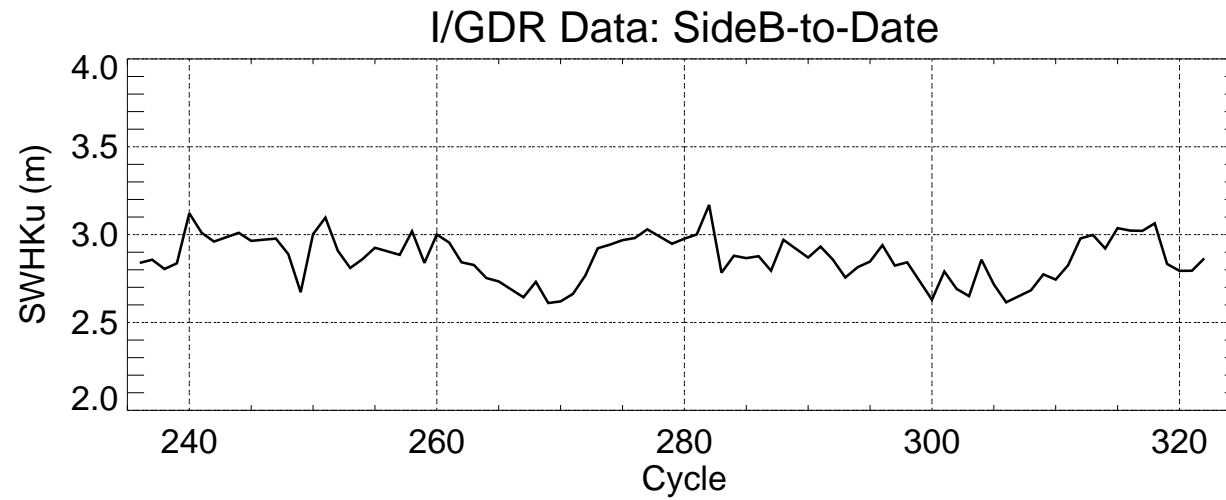


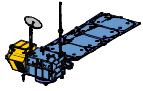
C-Band Side B Cyc-Avg Cal-1 & Cal-2 Delta AGC, Sigma0 (Cal Table Corrections Removed)



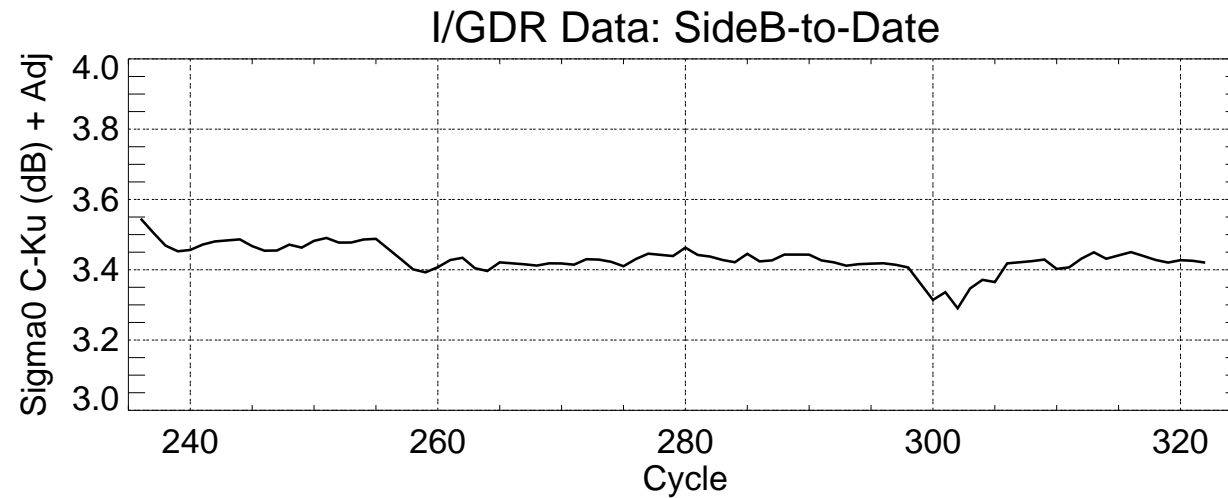
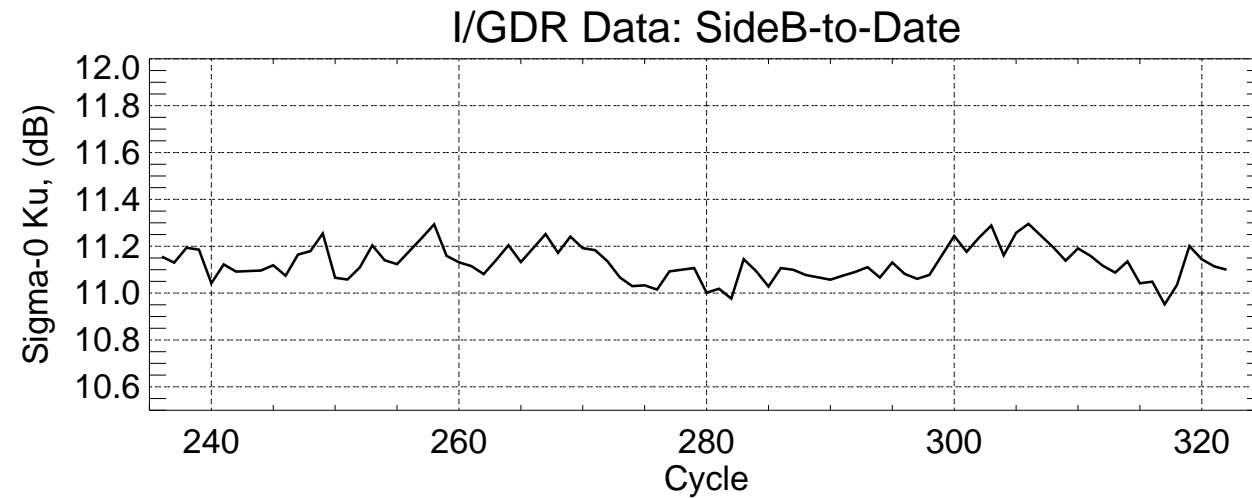


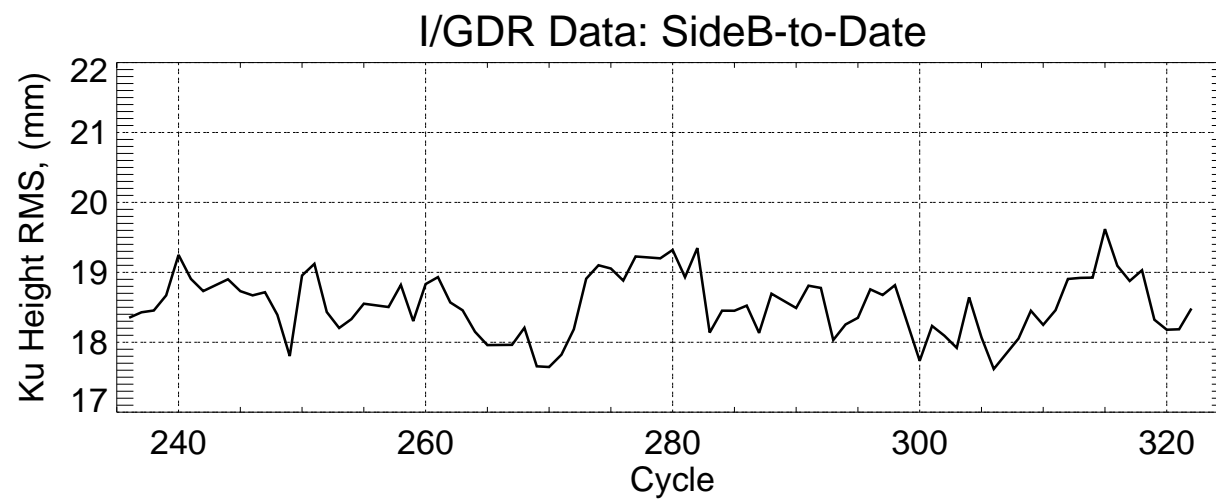
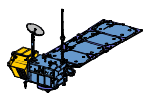
TOPEX ALT

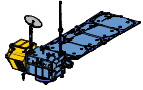




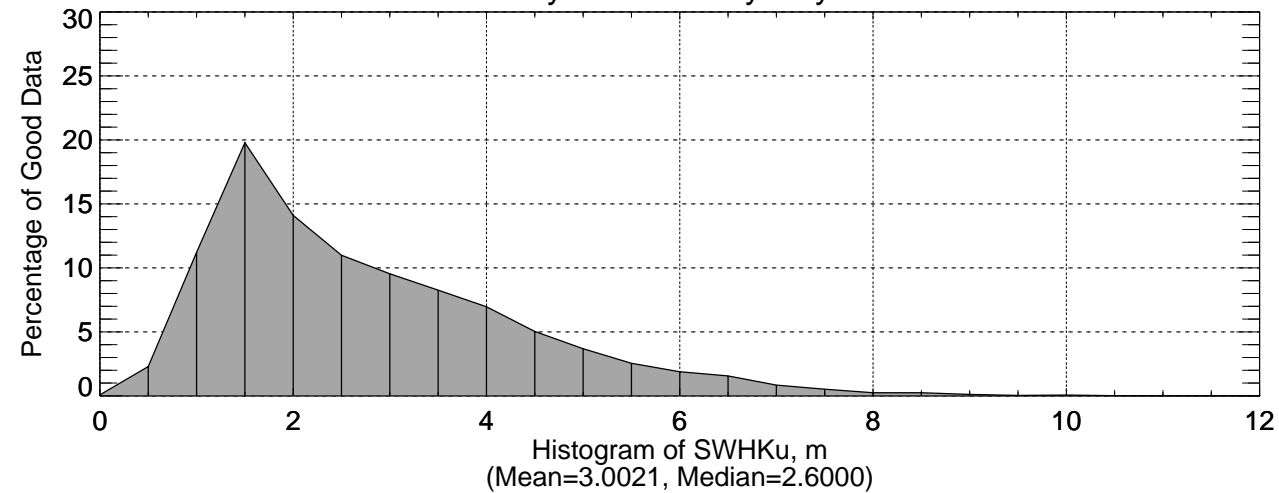
TOPEX ALT



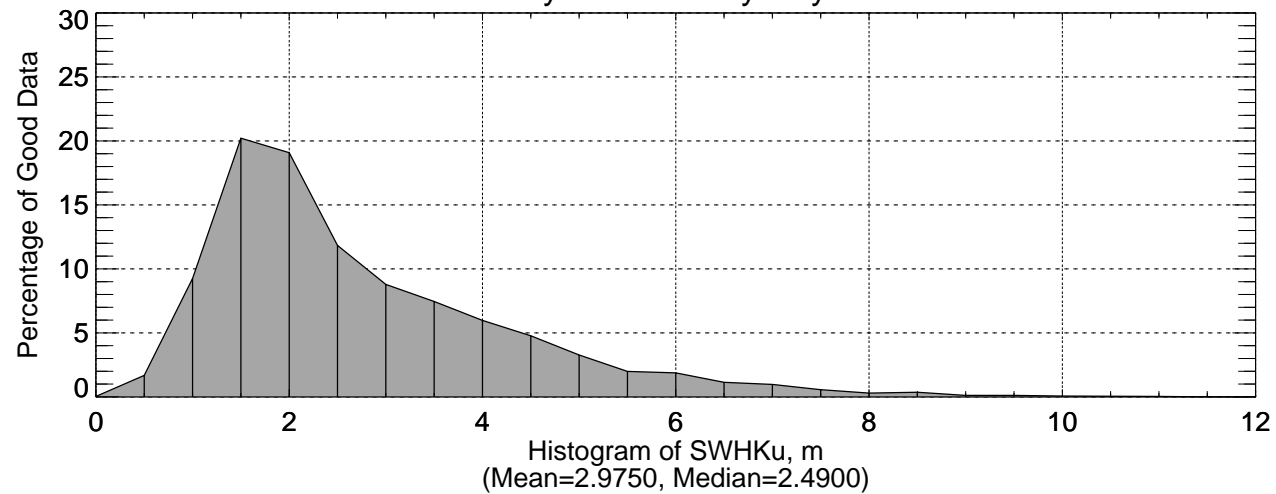


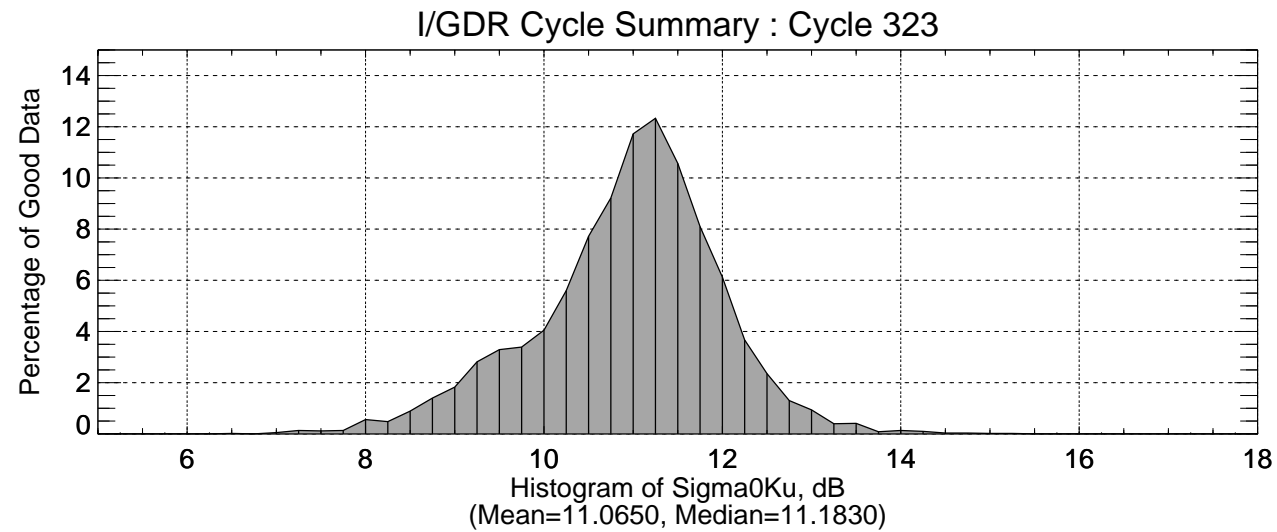
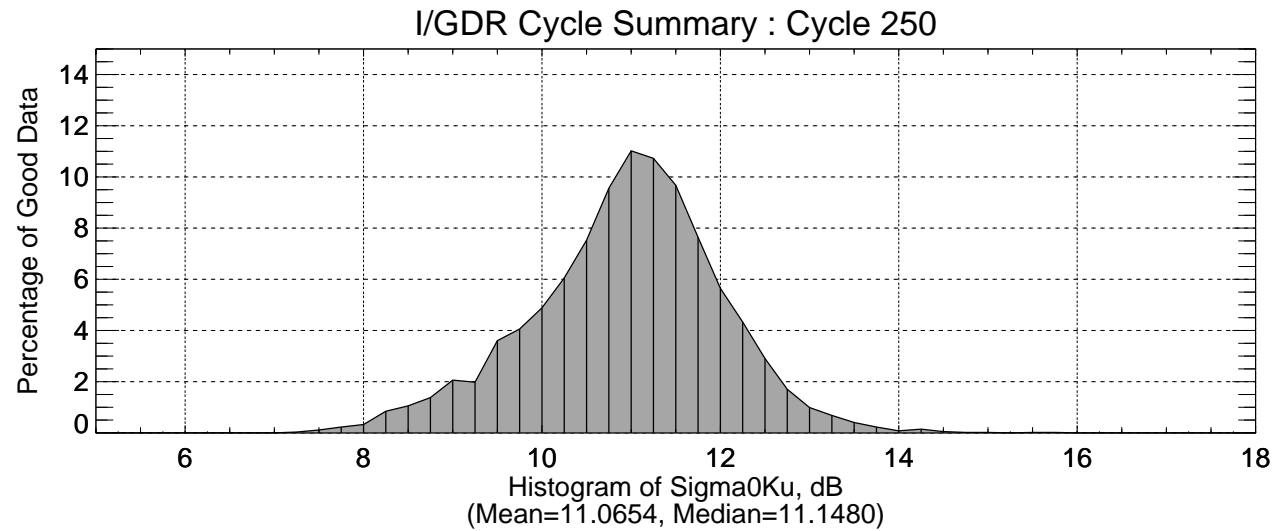
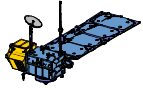


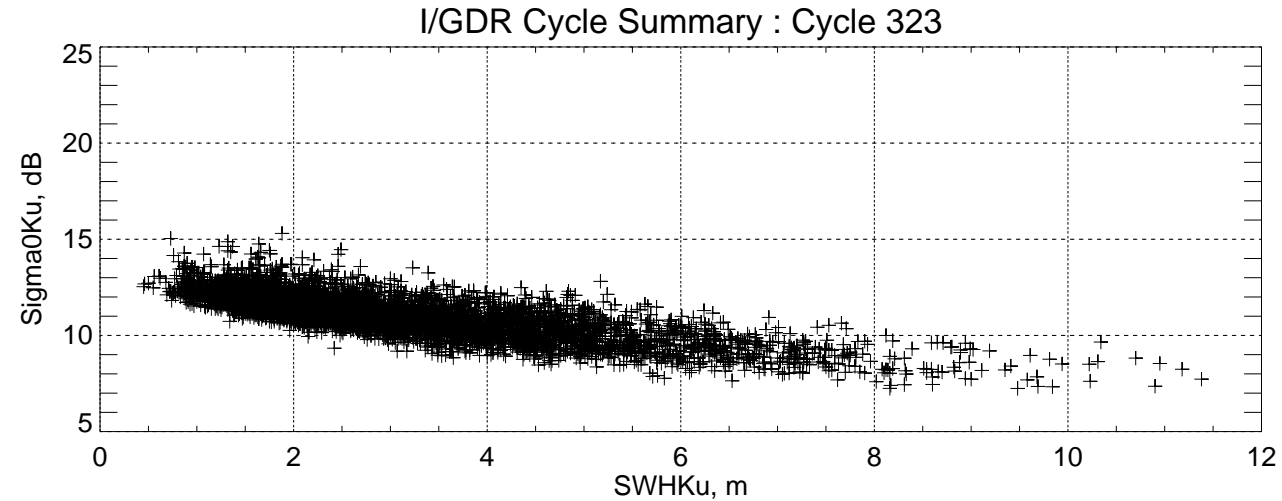
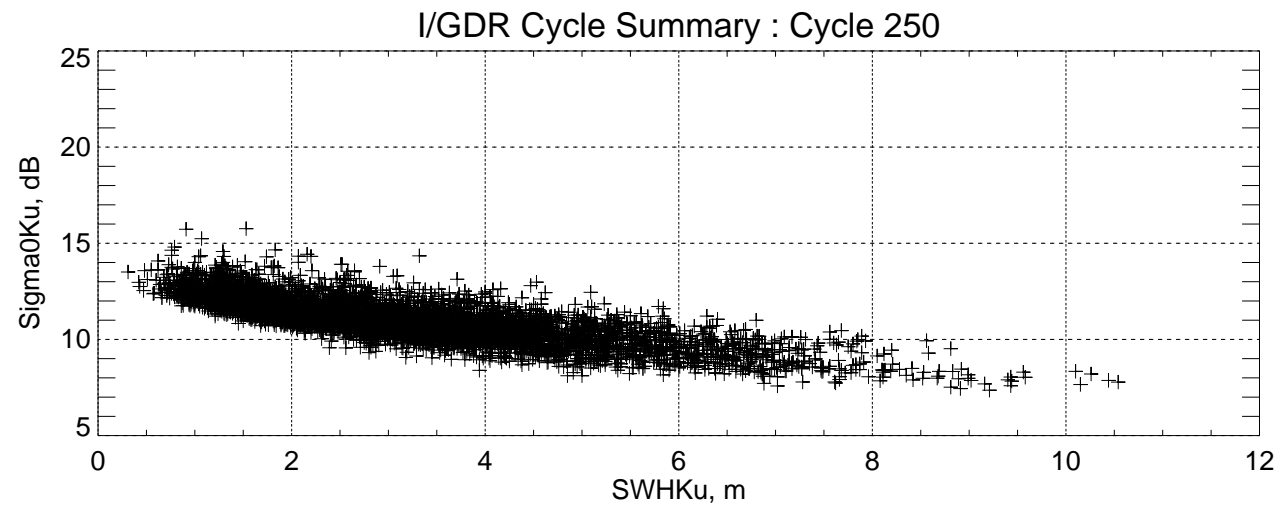
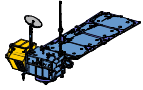
I/GDR Cycle Summary : Cycle 250

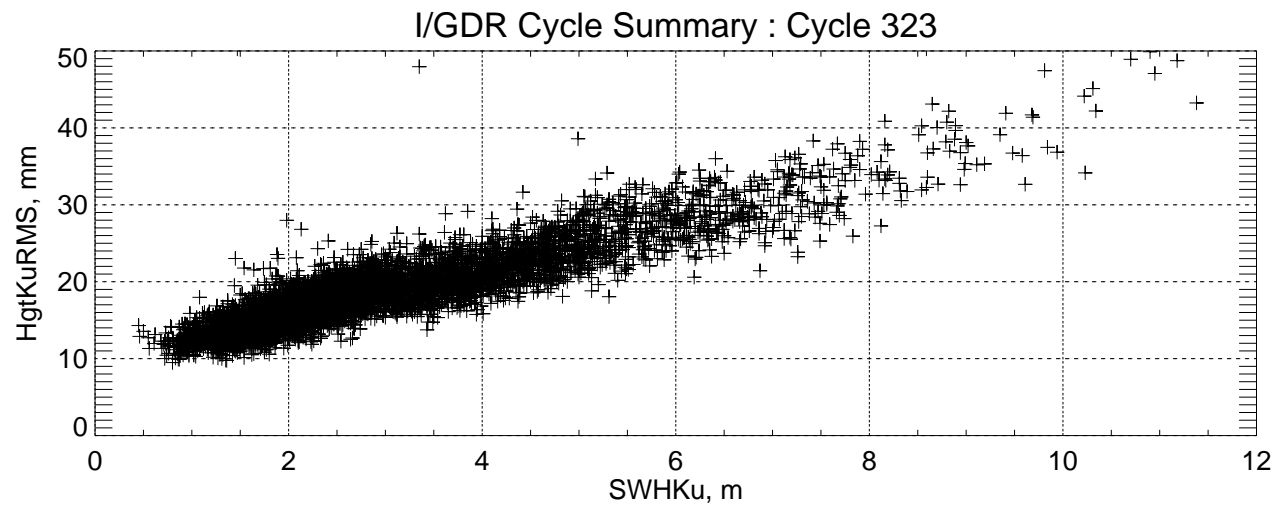
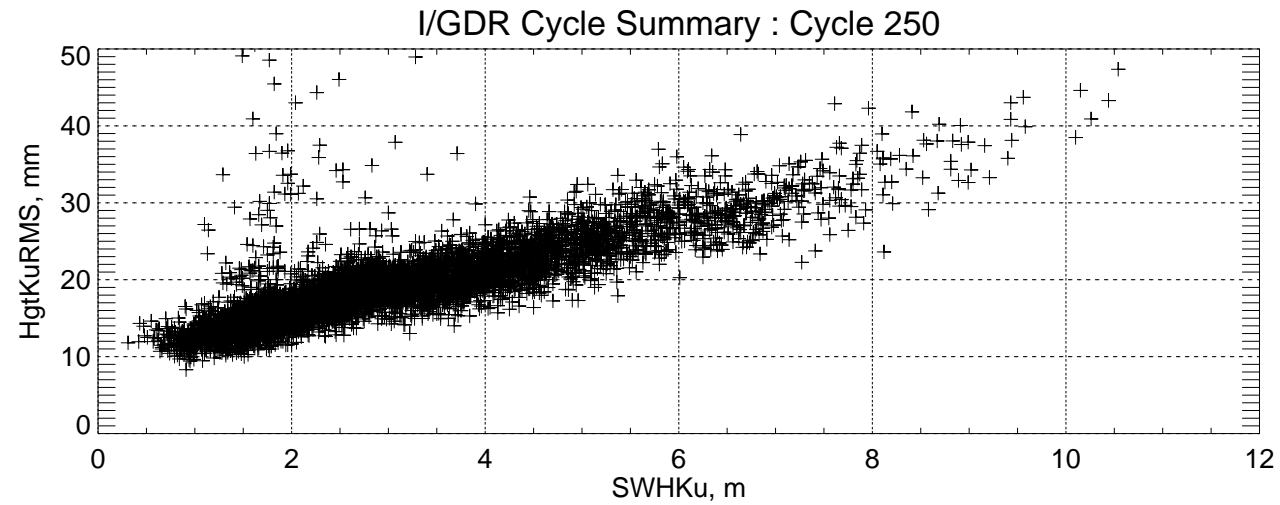
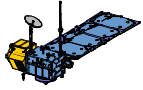


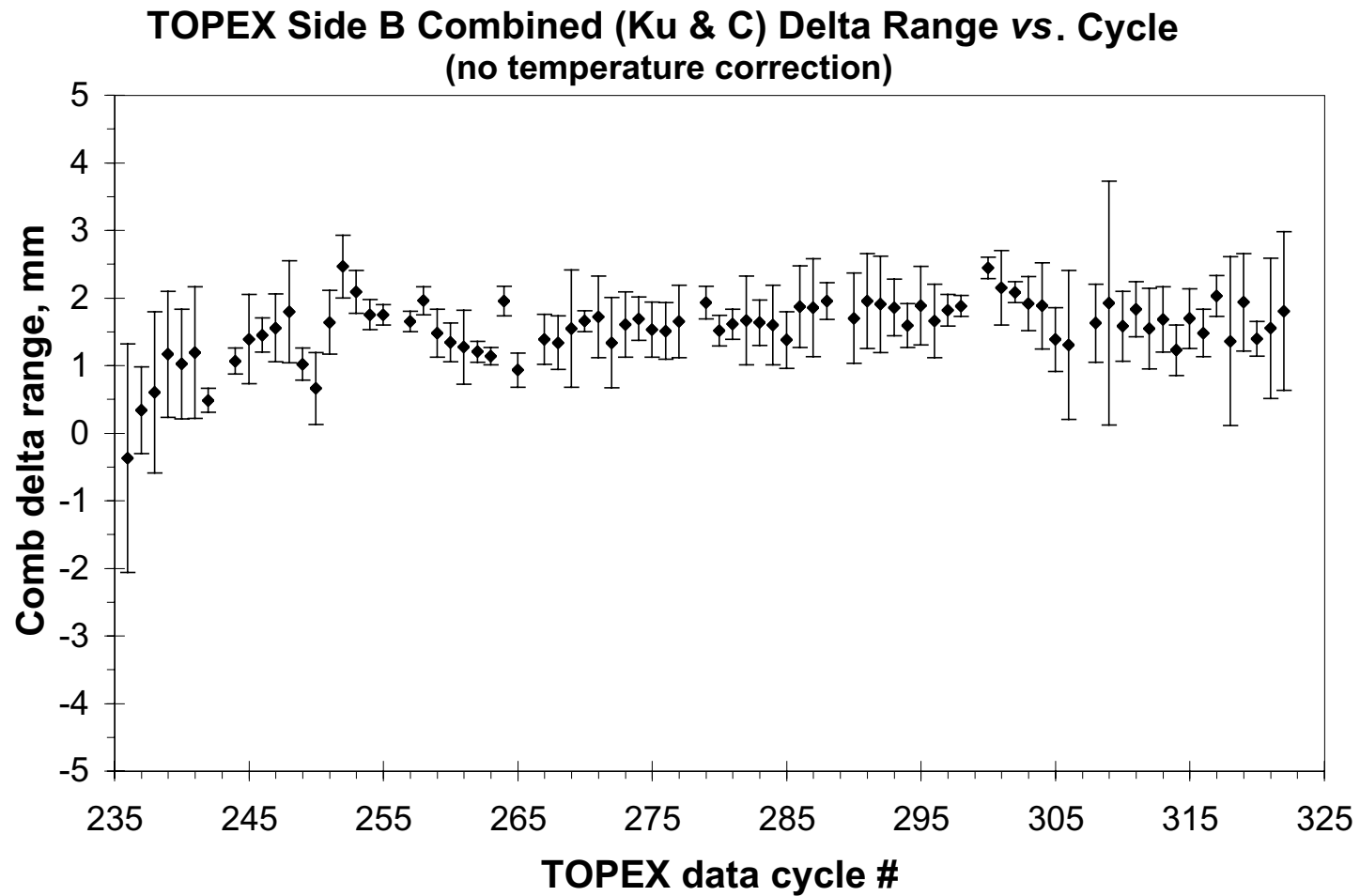
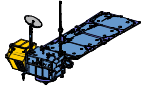
I/GDR Cycle Summary : Cycle 323

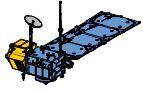




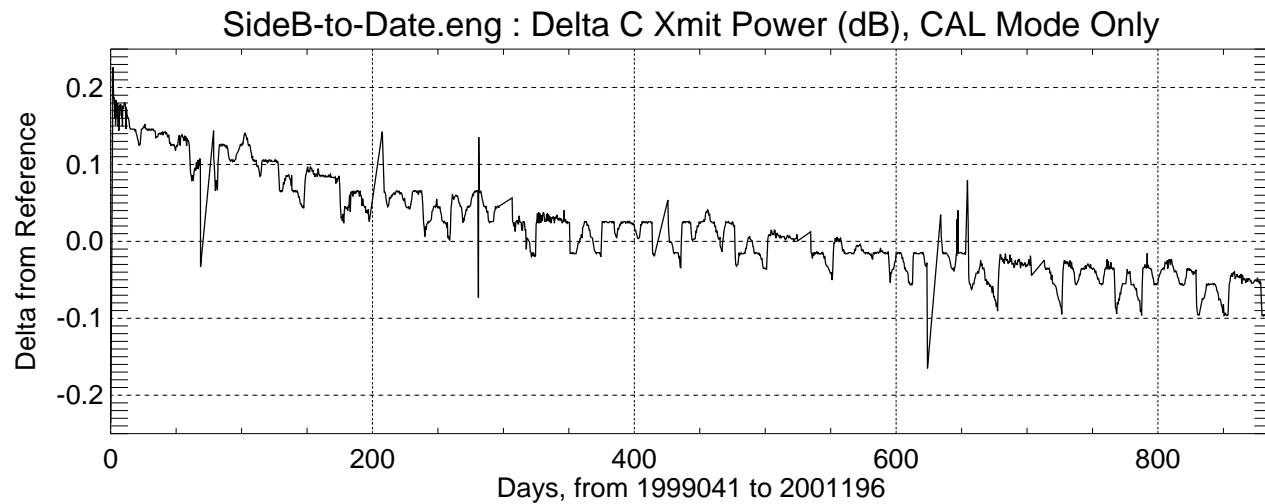
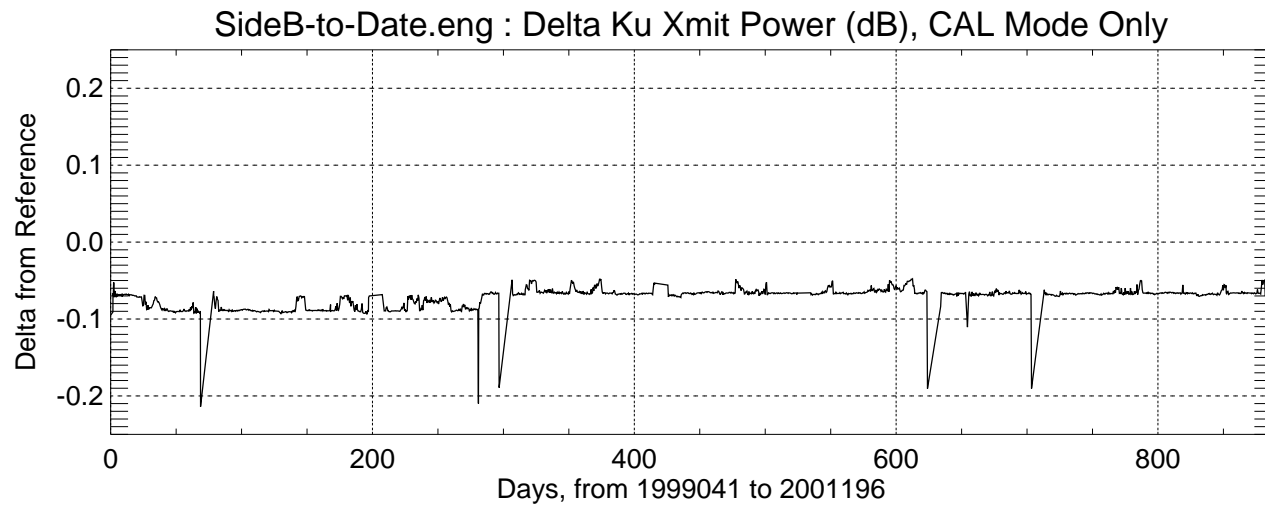






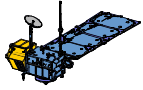


TOPEX ALT

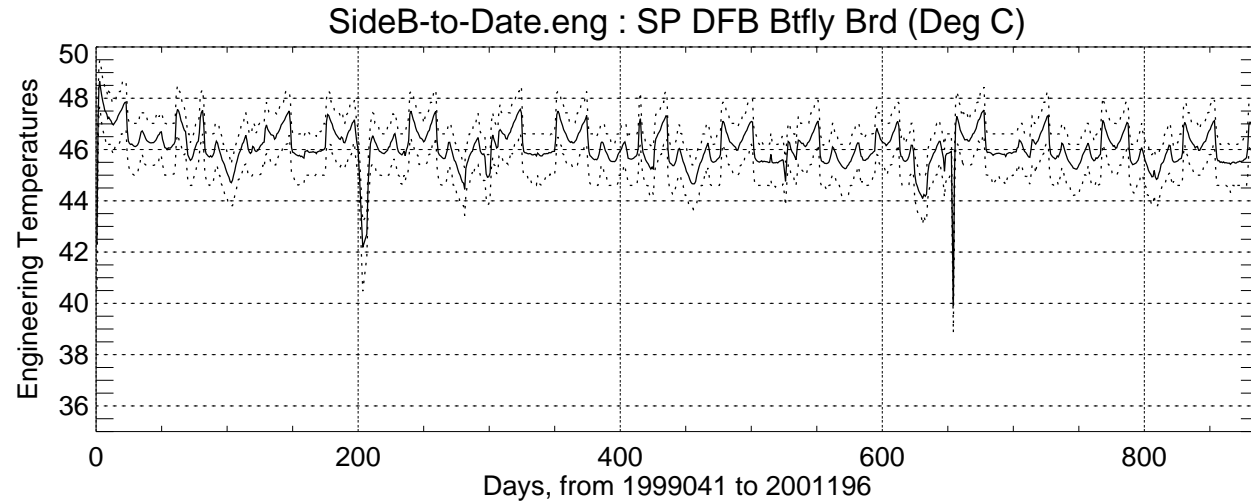
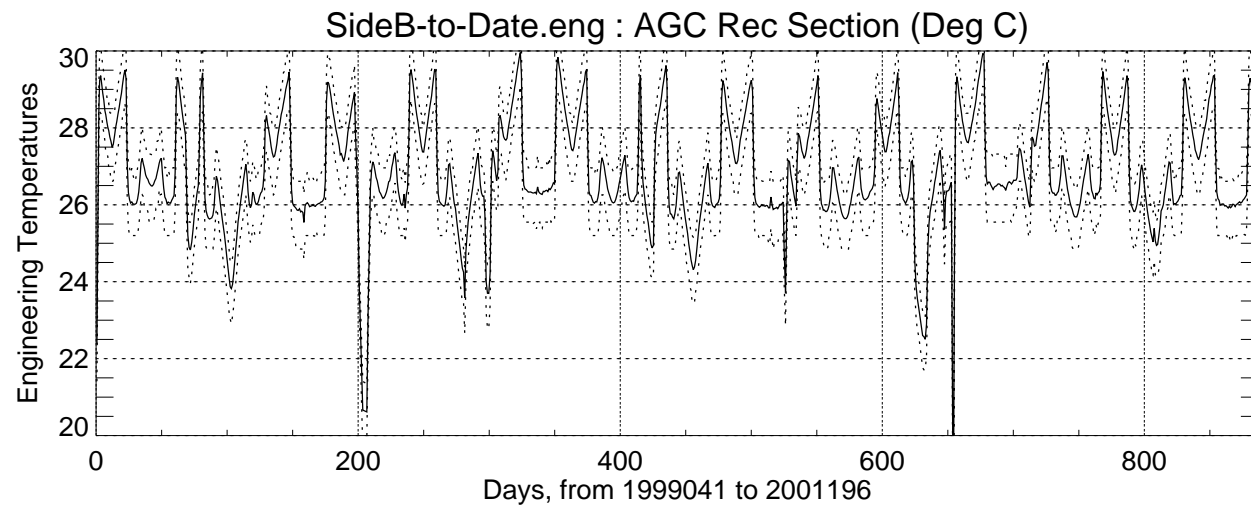


(24-Hour Averages)

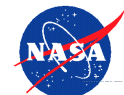


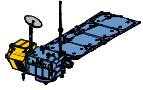


TOPEX ALT

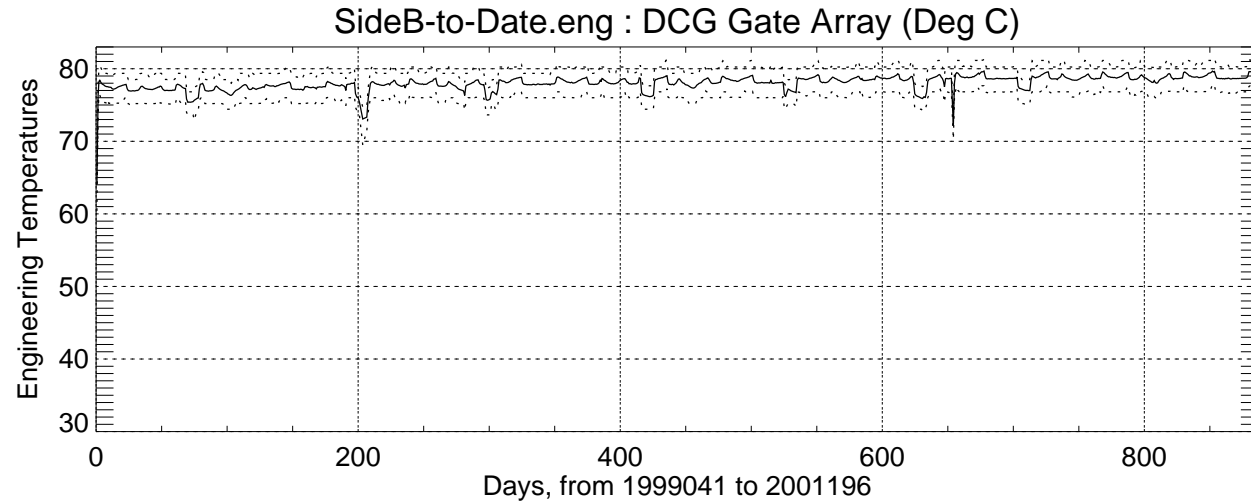
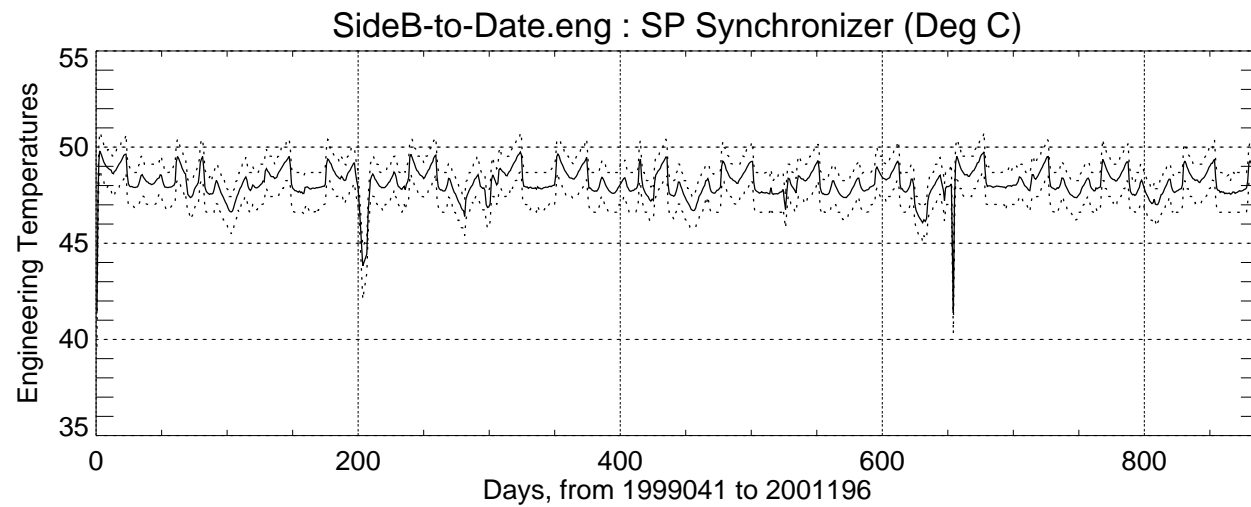


(24-Hour Averages)

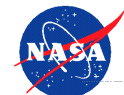


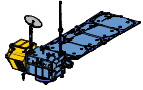


TOPEX ALT

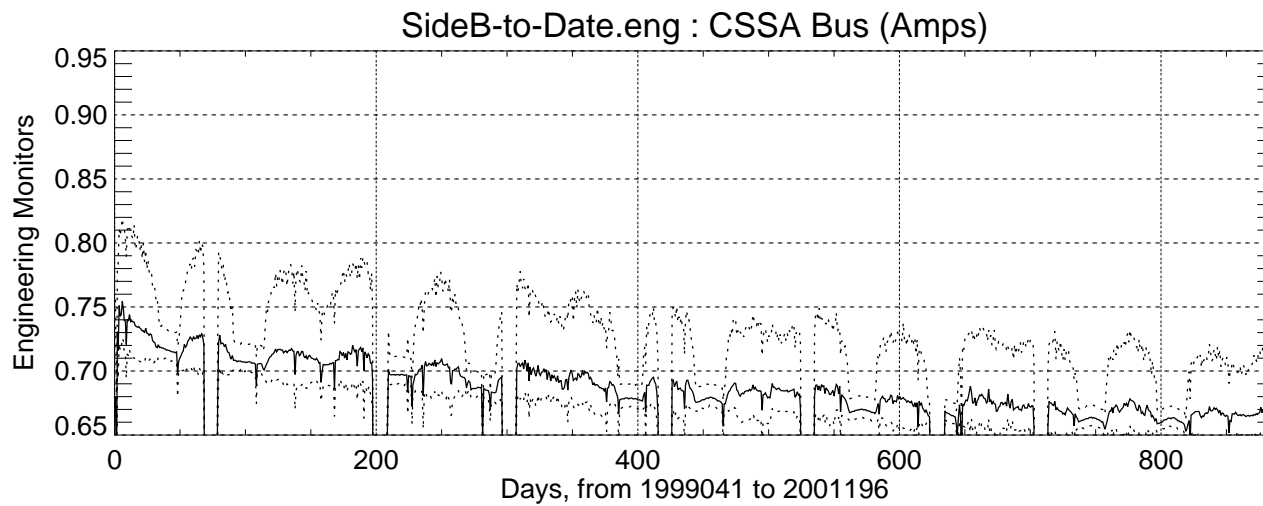
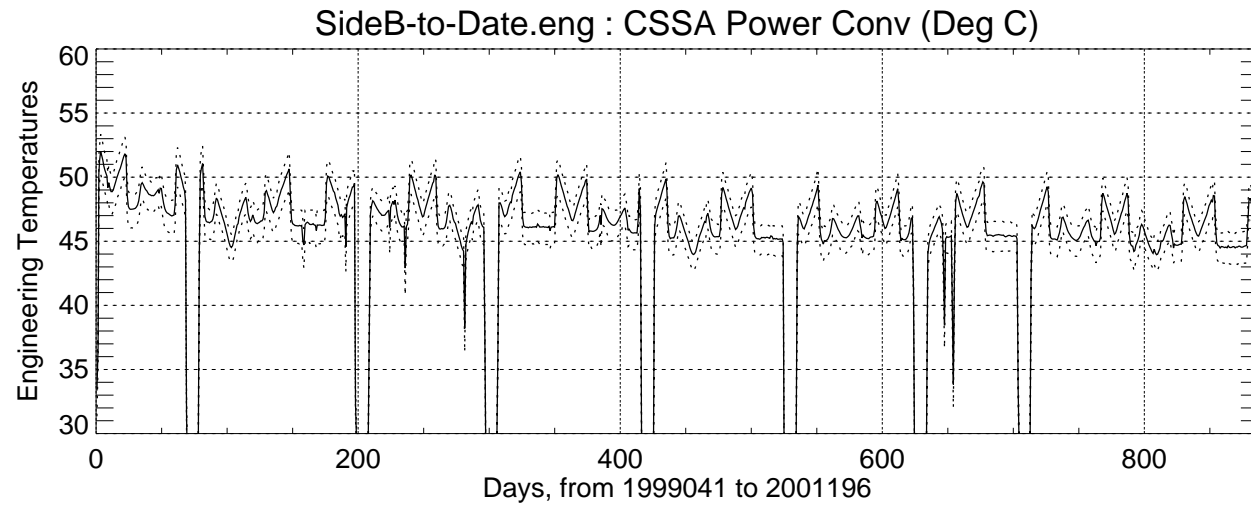


(24-Hour Averages)



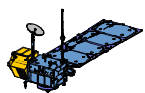


TOPEX ALT

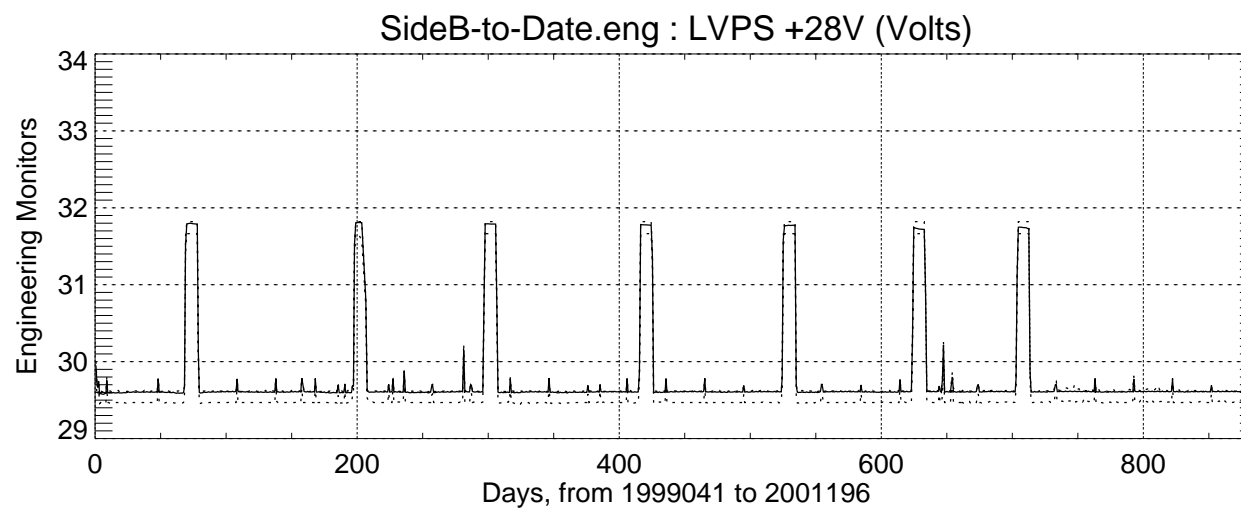


(24-Hour Averages)

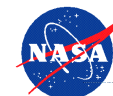


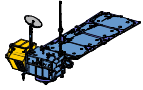


TOPEX ALT

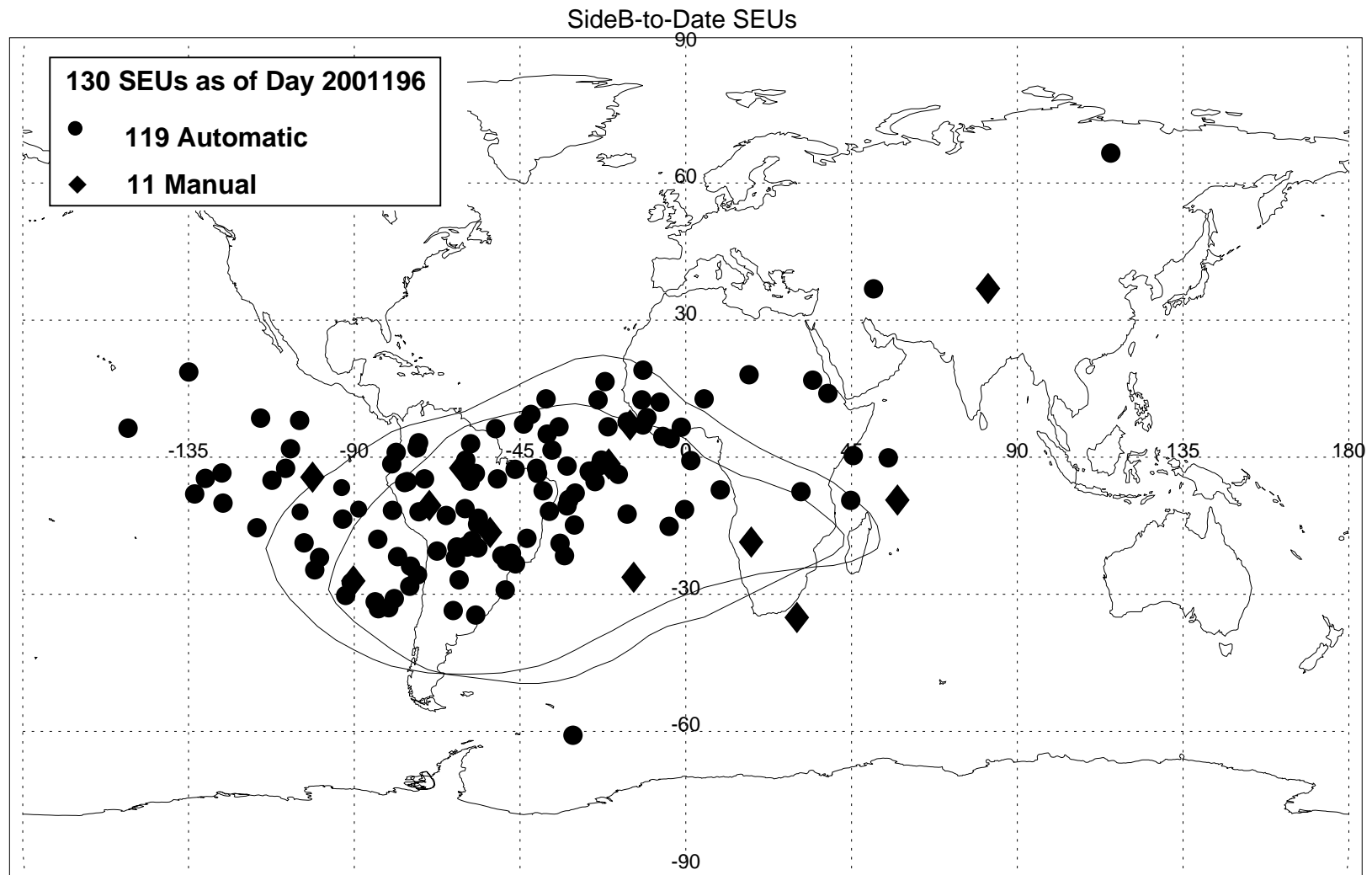


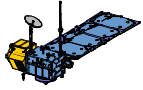
(24-Hour Averages)





TOPEX ALT





Concerns

Prior Concerns [from Workshop #9]

- **Side B DCG Gate Array Temperature**
 - Temperature remains stable.
- **Land-to-Water Acquisitions (Side B)**
 - Improved after Safehold 99/243
 - WFF regularly monitors the land-to-water acquisition times.
 - No Recurrence

New Concerns

- **None at this time.**

Issues

- **None at this time.**

